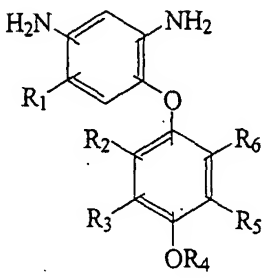
CLAIMS

What is claimed is:

1. An aromatic diamine derivative having the structure of formula (I):



Formula (I)

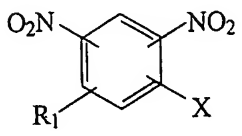
wherein,

each of R_1, R_2, R_3, R_5, and R_6, independently, is hydrogen or a monovalent organic functional group, and

R_4 is C_4-C_{20} alkyl, CO_2R_7, $CONR_7$, or $(CH_2)_nCF_3$, wherein n is an integer of from 1 to 5, and R_7 is C_4-C_{20} alkyl.

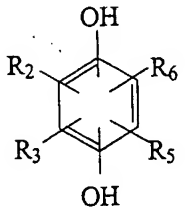
2. The aromatic diamine derivative according to claim 1 wherein each of R_1, R_2, R_3, R_5, and R_6, independently, is hydrogen or C_1-C_5 alkyl, R_4 is C_4-C_{20} alkyl, and the two amino groups are directly attached to the 2-position and the 4-positioned of the benzene ring.
3. The aromatic diamine derivative according to claim 1 wherein the aromatic diamine derivative is 1-[4-(2,4-diaminophenoxy)phenoxy]octane.
4. The aromatic diamine derivative according to claim 1 wherein the aromatic diamine derivative is 1-[4-(2,4-diaminophenoxy)phenoxy]dodecane.
5. A method for preparing the compound of formula (I) according to claim 1, the method comprising:

(a) reacting a dinitrobenzene compound of formula (II)



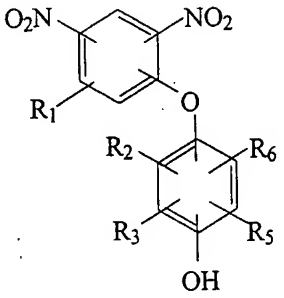
Formula (II)

with a hydroquinone compound of formula (III)



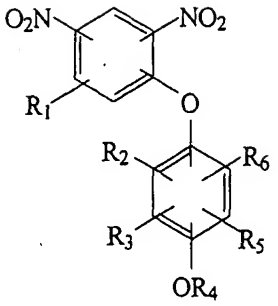
Formula (III)

in the presence of a base and an organic solvent to form a compound of formula (IV);



Formula (IV)

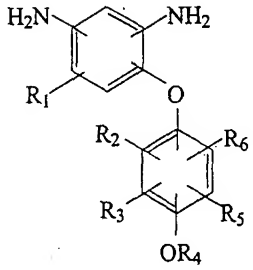
(b) reacting the compound of formula (IV) with a halide R_4X in the presence of a base and an organic solvent to form a compound of formula (V);



Formula (V)

and

(c) hydrogenating the compound of formula (V) to form the compound of formula (I),



Formula (I)

wherein R_1, R_2, R_3, R_4, R_5, and R_6 are those defined in claim 1, and X is halogen selected from the group consisting of F, Cl, and Br.

6. The method according to claim 5 wherein the base is selected from carbonates of IA and IIA metals, trimethylamine, triethylamine, and diisopropylethylamine.
7. The method according to claim 5 wherein the organic solvent is selected from acetone, butanone, N-methylpyrrolidone, N,N-dimethylacetamide, and N,N-dimethylformamide.
8. The method according to claim 5 wherein the halide is selected from C_4-C_{20} alkyl fluoride, chloride, and bromide.

9. A polyimide resin used as an alignment film material for a liquid crystal display device, the polyimide resin being prepared by a polymerization reaction between a tetracarboxylic acid or a dianhydride derivative thereof and a diamine, wherein the diamine comprises at least 5 mol% of one or more of the diamine derivatives of formula (I) according to claim 1.

10. The polyimide resin according to claim 9 wherein the diamine comprises at least 20 mol% of one or more of the diamine derivatives of formula (I) according to claim 1.

11. The polyimide resin according to claim 9 wherein the diamine comprises 1-[4-(2,4-diaminophenoxy)phenoxy]octane.

12. The polyimide resin according to claim 9 wherein the diamine comprises 1-[4-(2,4-diaminophenoxy)phenoxy]dodecane.